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TRANSACTIONS

OF THE

ROYAL

ENTOMOLOGICAL SOCIETY

OF LONDON

VOL. 89. 1939.

A KEY TO THE SPECIES OF CERATOPOGONIDAE AKIN TO *MACROPEZA* MG. (DIPTERA)

By J. W. S. MACFIE, M.A., D.Sc., M.B., Ch.B.

WITH PLATE 1 AND THREE FIGURES.

(Read 19th October, 1938.)

IN the following key I have attempted to distinguish all those species of CERATOPOGONIDAE akin to *Macropeza* known to me in which the thorax is narrowed in front, and so more or less conical.

All the species have a degree of similarity, but they fall, I think, into groups which correspond with the genera *Jenkinshelea*, *Pellucidomyia*, *Paryphoconus*, *Macroptilum*, *Calyptopogon*, and *Macropeza*, and I suggest that these generic names should be retained, for convenience even if for no other reason. The type specimens of *Haasiella semiflava* Kieff. and *Jenkinshelea setosipennis* (Kieff.) are still in existence, and the Director of the Zoological Survey of India has most kindly furnished me with camera lucida drawings of their wings. The drawing of *H. semiflava* shows a wing similar to that characteristic of the genus *Macroptilum*. The drawing of *J. setosipennis* shows conclusively that the wing is of the same form as that in the other species which have been assigned to the genus, and that although described by Kieffer (1913) as long and narrow ("aile étroite et très longue") in his key (p. 161), it is in comparison with the wings in other genera, broad, especially at the base, and possessed of an anal lobe of exceptional size. It shows, too, that the costa is prolonged beyond R4 + 5 only a relatively short distance. Five species are at present known referable to this genus. One, *J. boliviensis*, although assigned to it by Kieffer himself (and therefore included here by me) may not in fact belong to it because the wings, it appears, are of a different form, and are described as being " graduellement amincies à la base." It differs from all the other species in having the femora of the fore legs armed. Another, *J. rhodesiensis* de Meill., of which only one specimen has yet been found, has but a single radial cell (in place of two), and, by analogy, should be placed in a separate genus. In some of the allied species, however, the vein R2 is feebly or imperfectly developed, and as in other genera (e.g. *Palpomyia*, *Atrichopogon*) it is sometimes missing in abnormal individuals, it would be unwise, I think, to attach great importance

to it here unless further study proves it to be a constant feature associated with other differential characters. The two genera *Macroptilum* and *Macropeza* each include a number of species which vary in form to a considerable degree. They may require to be subdivided.

Very little is known about the males. The key, therefore, is planned for females only, but I have included in it, for the sake of completeness, the few males that have been described and which are not merely stated to be similar to the corresponding females. It has long been known that in some species, at any rate, the sexual dimorphism is notable, and recently (1937) de Meillon has again drawn attention to the fact in connection with his species *Macroptilum natalensis*. In my key, which is based largely on the characters of the wings, some of the males included are of course out of their proper places; that of *M. natalensis*, for example, and *Macroptilum bayeri*, falling into the *Paryphoconus* group of species to which they have no close affinities.

The genus *Stenoxenus* Coqu., of which seven species are now known, is clearly closely allied to the genera considered here, but differs from them all in having the thorax broad in front, not narrowed and cone-like.

The types of the new species described here are in the British Museum. The unit of measurement used is approximately 3·7 μ.

Table of Genera.

1. Wings very broad, especially at base; anal lobe large *Jenkinshelea* Macfie. Type—*setosipennis* (Kieff.).
–. Wings long and narrow . . . . . 2.
2. No microtrichia . . . *Pellucidomyia* Macfie. Type—*ugandae* Macfie.
–. Microtrichia present . . . . . 3.
3. Cross-vein short or very short, M and R therefore close together, the cell between them at its widest part narrower than distance at same level between M and Cu or Cu1. Costa not reaching tip of wing *Paryphoconus* Enderlein. Type—*angustipennis* End.
–. Cross-vein long, M and R therefore widely separated, the cell between them at its widest part not narrower than distance at same level between M and Cu or Cu1. Tip of wing usually pointed. Costa usually reaching tip . . . . . 4.
4. Costa extending for some distance beyond its junction with R4 + 5; radial cell very narrow . . . . . 5.
–. Costa extending only a short distance beyond its junction with R4 + 5; at least distal part of radial cell wide or moderately wide . . . . . 6.
5. Thorax sharply pointed in front, projecting well over head. Femora of fore legs thickened at apex. Cross-vein about middle of wing. Anal lobe very poorly developed, the angle very obtuse *Calyptopogon* Kieffer. Type—*albitarsis* Kieff.
–. Thorax bluntly conical in front. Femora of fore legs slender or only slightly thickened at apex. Anal lobe well or moderately well developed, the angle rectangular or obtuse *Macropeza* Meigen. Type—*albitarsis* Mg.
6. Cell between costa and R widest at its distal end (♀). Tip of wing usually pointed. Cross-vein usually distal to middle of wing. A single radial cell . . . . . *Macroptilum* Becker. Type—*nudum* Beck.
–. Cell between costa and R very narrow at its distal end. Cross-vein about middle of wing. Two radial cells . . . . . *M. calcipennis* sp. n.

Key for the determination of the species of CERATOPOGONIDAE akin to *Macropeza* in which the thorax is narrowed anteriorly and so more or less conical.

1. Wings very broad, especially at base; anal lobe large (*Jenkinshelea*)[1] . . 2.
–. Wings long and narrow . . . . . 6.
2. Only a single radial cell. Rhodesia . . *rhodesiensis* de Meillon, 1937.
–. Two radial cells . . . . . 3.
3. Femora of fore legs armed with two black spines. Bolivia *boliviensis* (Kieffer, 1917).
–. Femora unarmed . . . . . 4.
4. Costa extending some distance beyond R4 + 5. Large species, length of wing 4·3 mm. Zululand . . . . *polyxenae* de Meillon, 1936.
–. Costa produced beyond R4 + 5 only a short distance. Smaller species, length of wing about 2·5 mm. . . . . 5.
5. Fore legs with fifth tarsal segment armed with a single spine. Claws of hind legs simple. India (Calcutta) . . *setosipennis* (Kieffer, 1913).
–. Fore legs with fifth tarsal segment armed with three pairs of spines. Claws of hind legs barbed. Gold Coast . *accraensis* (Ingram & Macfie, 1923).
6. Wings without microtrichia (*Pellucidomyia*). Uganda. *ugandae* Macfie, 1938.
–. Wings with microtrichia 7
7. Cross-vein short or very short, M and R therefore close together, the cell between them at its widest part narrower than the distance at the same level between M and Cu or Cu1. Costa not, or not quite, reaching tip (*Paryphoconus*) . . . . . 8.
–. Cross-vein long, M and R therefore widely separated, the cell between them at its widest part not narrower than the distance at the same level between M and Cu or Cu1. Tip of wing usually pointed. Costa reaching tip . . . . . 14.
8. Wings adorned . . . . . 9.
–. Wings often infuscated, but without definite adornment . . . . . 12.
9. Last five segments of antenna white, together almost twice as long as 3–10 combined. Colombia, Paraguay . . *anomalicornis* Kieffer, 1917.
–. Last five segments of antenna dark brown or blackish . . . . . 10.
10. Wing with dark cloud in anal angle as well as at tip and over cross-vein. Brazil . . . . . *angustipennis* Enderlein, 1912.
—. Wing without this dark spot in the anal angle . . . . . 11.
11. Large species, length of wing 5·5 mm. Costa ending at about same level as M1. Legs entirely very dark brown. Argentina *nigripes* sp. n.
—. Smaller species, length of wing 3·0 mm. Costa ending at about same level as M2. Legs mainly yellowish. Brazil . . . *nubifer* sp. n.
12. Hind legs with femora and tibiae dark brown. Zululand *natalensis* de Meillon, 1937 (♂).
—. Hind legs with femora and tibiae mainly brown or yellowish-brown . . 13.
13. Hind legs uniformly brownish, with very slight infuscations at knees. Zululand . . . . . *bayeri* de Meillon, 1937 (♂).
—. Hind legs with distal quarter of tibiae and all tarsal segments blackish. Brazil . . . . . *grandis* sp. n.
14. Costa extending for some distance beyond its junction with R4 + 5, radial cell very narrow . . . . . 15.
—. Costa extending only a very short distance beyond its junction with R4 + 5, at least the distal part of the radial cell wide or moderately wide . . . 23.
15. Thorax sharply pointed anteriorly, projecting well over head. Femora of fore legs thickened at apex. Cross-vein about middle of wing (*Calyptopogon*) . . . . . 16.

[1] As suggested by de Meillon (1937) a new genus is required for some of these species, or perhaps two new genera.

—. Thorax bluntly conical anteriorly. Femora of fore legs slender, or only slightly thickened at apex . . . . . 18.
16. Femora and tibiae of hind legs very dark brown . . . . . 17.
—. Femora and tibiae of hind legs pale brown. East Indies, Malaya *gibbosus* (Wiedemann), 1828 (Syn. *javanensis* Kieffer, 1910).
17. Hind legs very long, with first tarsal segment nearly twice length of tibia, and white. India, Malaya, Siam *albitarsis* Kieffer, 1910 (Syn. *kiefferi* Johannsen, 1927).
—. Hind legs not unusually long, with first tarsal segment shorter than tibia, and very dark brown. Siam . . . . . *brevitarsis* sp. n.
18. Anal lobe of wing well developed, the angle rectangular or like a heel (*Macropeza*) . . . . . 19.
—. Anal angle obtuse. Legs mainly yellowish, but knees, tips of tibiae, and last tarsal segments blackish . . . . . 21.
19. Legs wholly pale. North Europe . . . . *albitarsis* Mg. var. b. Zett.
—. Femora and tibiae largely blackish . . . . . 20.
20. Mesonotum ash grey, with three dark antero-posterior bands. Europe *albitarsis* Meigen, 1818.
—. Mesonotum blackish. Europe . . . . . *valvata* (Winnertz, 1852). (♂).[2]
21. Hind legs long, first tarsal segment about twice length of tibia. Fifth tarsal segment armed on all legs. Ceylon *edwardsi* sp. n. (**Syn. n.** *javanensis* Edwards, 1913 *nec* Kieffer, 1910).
—. Hind legs not so long . . . . . 22.
22. Darkish brown species. First tarsal segment of hind legs slightly longer than tibia (37 : 27); fifth unarmed. South Africa . . *capensis* sp. n.
—. Darkish brown species. First tarsal segment of hind legs same length as tibia; fifth armed. South Africa . . . . . *affinis* sp. n.
23. A single radial cell, usually much narrower at base than in middle (♀) (*Macroptilum*) . . . . . 24.
—. Two radial cells, both wide. Sierra Leone . . . *calcipennis* sp. n.
24. Tip of wing rounded. Cross-vein about middle of wing . . . . . 25.
—. Tip of wing pointed. Cross-vein distal to middle of wing, and about same length as distance between bases of M1 and M2 (*Macroptilum*) . . 26.
25. Hind legs very long, first tarsal segment over three times as long as tibia. Spain . . . . . *navasi* Séguy, 1934.[3]
—. Hind legs shorter, first tarsal segment about one and a quarter length of tibia (34 : 28). Formosa . . . . . *similis* (Johannsen), 1927.
26. Wings with fringe much reduced or wanting. Hind legs very long, first tarsal segment 2–3 times the length of tibia [4] . . . . . 27.
—. Wings with fringe as usual . . . . . 30.
27. Anal lobe of wing well developed, the angle almost rectangular. West Africa . . . . . *insignipennis* sp. n.
—. Anal angle obtuse . . . . . 23.
28. Halteres almost white. Madagascar . . . *pallidipes* Séguy, 1931.
—. Halteres brown or blackish . . . . . 24.
29. Tarsus of hind leg 7·9 mm. (tibia 2 mm.), white. Zambesi *longipes* Séguy, 1931.
—. Tarsus of hind leg 9·22 mm. (tibia 2·2 mm.), pale brown. Nigeria *nigeriae* Ingram & Macfie, 1923.

[2] This species is generally considered to be the same as *M. albitarsis* Mg., the male.

[3] This species may be out of place here, for although it bears a general resemblance to species of *Macroptilum*, the excellent figure given by Séguy shows clearly that the tip of the wing is rounded, and that the cross-vein is situated about the middle of the wing. The species named *similis* by Johannsen (1927) is also placed here doubtfully.

[4] The characters given for the separation of *Macroptilum pallidipes*, *M. longipes*, *M. nigeriae*, *M. nigrum*, and *M. nudum* are those used by Séguy himself. Some of them seem to be hardly of specific importance.

30. Hind legs very long, first tarsal segment much longer than tibia. Zululand *aethiopicum* Ingram & Macfie, 1923 (Syn. *meeseri* de Meillon, 1936).
—. Hind legs not remarkably long . . . . . 31.
31. Mesonotum blackish. First tarsal segment of hind legs dark brown. Zambesi . . . . . *nigrum* Séguy, 1931.
Zululand . . . . . *natalensis* de Meillon, 1937 (♀).
—. Mesonotum grey or dark grey. First tarsal segment of hind legs largely yellow. Egypt (Cairo) . . . . . *nudum* Becker, 1903.
—. Yellow; antennae, abdomen, and fifth tarsal segments black. India *semiflava* (Kieffer, 1913).[5]

Paryphoconus angustipennis End.

Brazil: Nova Teutonia, 10.xi.1936, 1 ♀, 18–22.xi.1937, 3 ♀♀, and 22–24.xii.1937, 2 ♀♀ (*Fritz Plaumann*).

The characters of these insects correspond well with those of *Paryphoconus angustipennis* given by Enderlein (1912) and Kieffer (1917). The following additional points are given to facilitate a comparison with other species now known, particularly the one of which a description follows immediately.

♀. Length of wing about 6·5 mm., greatest breadth about 1·5 mm.

Head very dark brown. Eyes bare, widely separated above. Palpi brown, short, the third segment subcylindrical, without pit: lengths of last three segments about 29, 16, and 22 units respectively. Antennae with torus and base of third segment yellowish-brown, rest very dark brown or blackish. Hairs, especially those on segments 3 to 10, dense, dark, and more or less lanceolate. Segments 4–10 subcylindrical, measuring from about 35 by 12 to 34 by 9 units; 11–14 more elongate, about 70–80 by 7–9 units; 15 about 120 by 5–6 units, with blunt end. The combined lengths of segments 3–10, 4–10, and 11–15 about 295, 225, and 425 units respectively, but in the dried insect the five terminal segments are much contracted and appear to be shorter.

Thorax dark brown, shining, with a broad, paler brown, antero-posterior band on each side of middle line of scutum. Hairs sparse and pale. Scutellum similar, slightly paler in middle than at sides. Anterior border produced over base of head, bluntly conical, with a small tubercle.

Wings as shown in Enderlein's figure. Dark patch at tip larger than in next species, the infuscation extending towards base well beyond ends of costa and M2. No macrotrichia. Microtrichia dense, normal. Fringe short. Halteres with pale brown knobs.

Legs slender, with short hairs, the hind pair longer, but not very much longer, than anterior four. Proportionate lengths of segments of hind legs about 41 : 35 : 21 : 9 : 2 : 1·5 : 3. Form of segments normal. Femora and fifth tarsal segments neither swollen nor armed. Legs almost uniformly yellowish-brown, but last 2–3 segments of all tarsi dark brown, and tibiae of hind legs slightly infuscated especially at extremities. T.R. a little more than 2. Claws small, equal, each with a very small barb.

Abdomen very dark brown or blackish, darkest at base and tip. After maceration in caustic potash it can be seen that tergites 3 to 7 have each a V-shaped excavation in middle line anteriorly, and that tergites 4 to 7 bear gland rods. Spermatheca single, highly sclerotised, oval, about 145 μ by 100 μ; the duct sclerotised at its commencement for a short distance, about 16 μ.

Paryphoconus nubifer sp. n.

A very dark brown species with the tips of the wings adorned with a dark brown zone, and the hind legs with the apical quarter of the tibiae and all the tarsal segments (except the basal half of the first) dark brown.

[5] This species, for which Kieffer (1913) erected the genus *Haasiella*, has the characters of *Macroptilum*, and is assumed here to belong to that genus.

♀. Length of wing about 3·0 mm., greatest breadth about 0·8 mm.

Head very dark brown or blackish. Eyes bare, widely separated above. Palpi pale brown, the third segment subcylindrical, without pit; lengths of last three segments about 14, 8, and 9 units respectively. Antennae blackish with short, simple, hairs: segments 4–10 subcylindrical, subequal, about 16 by 6 units; 11–14 subcylindrical, subequal, about 31 by 5 units; 15 about 35 by 5 units, without stylet. The combined lengths of segments 3–10, 4–10, and 11–15 about 135, 107, and 160 units respectively.

Thorax blackish, shining, with moderately dense pubescence. Anterior margin narrowed, bluntly conical, with a small tubercle. Scutellum blackish.

Wings adorned with a dark patch at tip which covers the area distal to level of end of costa. Veins dark brown; Cu2 more broadly infuscated, as is also the cross-vein and the distal part of the false vein just beyond Cu1. No macrotrichia. Microtrichia conspicuous, covering whole wing surface. Fringe normal. Anal angle very obtuse, without any dark spot. Costa extending seven-eighths length of wing, ending slightly beyond level of end of M2. Radial cell single, very narrow, the veins indeed almost in contact distally. Cross-vein short. M1 and M2 arising close together, the distance separating them hardly as long as cross-vein. Fork of Cu slightly proximal to level of cross-vein, or of fork of M. Halteres with darkish brown knobs.

Legs slender, with sparse short hairs, and form of segments normal. Femora and two basal segments of all legs, and tibiae of four anterior legs yellowish. Tibiae of hind legs yellowish excepting apical quarter, which is dark brown. Tarsal segments dark brown excepting first two on four anterior legs, and basal half of first on hind legs, which are yellowish. Femora not thickened. Hind legs not especially long: proportionate lengths of segments about 17 : 15 : 9 : 4·5 : 1 : 0·5 : 1·5. Femora and fifth tarsal segments unarmed on all legs. Fourth tarsal segment short but hardly cordiform, more bell-shaped. T.R. about 2. Claws small, equal, each with a very small barb which may be difficult to see.

Abdomen very dark brown, almost as dark as scutum. Tergites 4–7 with long gland rods, 3 with rudiments. Spermatheca single, highly sclerotised, oval but tapering towards duct: total length about 90 μ, and greatest breadth about 48 μ.

Brazil: Nova Teutonia, 24.xi.1937, 1 ♀, and 1.xii.1937, 3 ♀♀, Holotype and 2 paratypes (*Fritz Plaumann*).

This insect resembles *P. angustipennis* End., a species which is, however, larger (length of wing 4·5 mm. or more), and bears on the wings a dark spot in the anal angle.

Paryphoconus grandis sp. n.

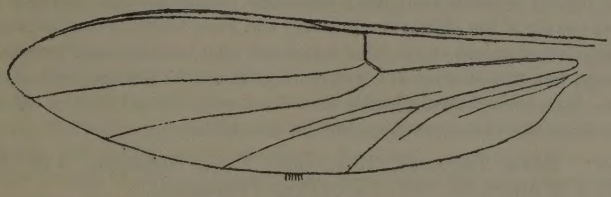
A very large and dark brown species, with the wings brownish but not otherwise adorned, the femora and fifth tarsal segments unarmed, and the hind legs with the distal quarter of the tibiae and all the tarsal segments blackish.

♀. Length of wing from about 5 mm. to 7 mm., greatest breadth from about 1·3 mm. to 1·9 mm.

Head dark brown. Eyes bare, widely separated above. Palpi small, brown, but last segment entirely dark brown: lengths of last three segments about 18, 10, and 13 units respectively, the third without a definite pit. Antennae blackish, but torus and bases of segments 3–10 paler, more yellowish. Segments 4–10 cylindrical, subequal, about 26–27 by 7–8 units; 11–14 more elongate, subequal, about 50 by 7 units; 15 about 60 by 7 units, without stylet. The combined lengths of segments 3–10, 4–10, and 11–15 about 190, 245, and 260 units respectively.

Thorax dark or very dark brown, densely clothed with pubescence and with short hairs. Scutellum similar, but paler. Thorax narrowed anteriorly, bluntly conical. Anterior tubercle present, but very small.

Wings more or less infuscated, especially along anterior border, but without specific adornment. Anterior veins dark brown, others paler brown, or appearing as white lines against the general brown infuscation of the wing. No macrotrichia. Microtrichia well developed, covering whole surface. Fringe normal. Anal angle very obtuse. Costa reaching almost to tip of wing, ending slightly nearer to tip than does M1. Radial cell



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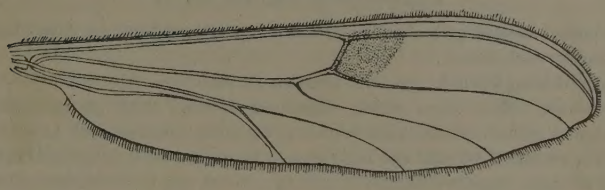

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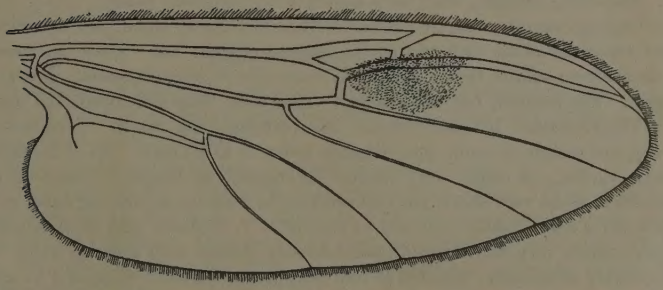

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FIGS. 1–3.—Wings of: 1. *Macropeza edwardsi* sp. n.; 2. *Macroptilum semiflava* (Kieff.); 3. *Jenkinshelea setosipennis* (Kieff.).

Figures 2 and 3 are reproduced from drawings kindly supplied by the Director of the Zoological Survey of India. The patch of stippling shown on each indicates that the wings are covered with microtrichia, and does not signify adornment.

single, very long and narrow (but not so narrow as in the preceding species), infuscated. Cross-vein proximal to middle of wing, short, about same length as distance which separates bases of M1 and M2. Fork of Cu proximal to level of fork of M. Halteres with dark brown knobs.

Legs rather dark yellowish-brown. All knees blackish. Four anterior legs with extreme apex of tibia slightly infuscated, and last 2–3 tarsal segments blackish. Hind legs not exceptionally long, with distal quarter of tibiae and all tarsal segments blackish. Pro-

portionate lengths of segments of hind legs about 38 : 32 : 20 : 8 : 3 : 1·5 : 2·5. Segments slender, not swollen, moderately hairy, of normal form. All femora slender, unarmed. Fourth tarsal segments short, bell-shaped; fifth not swollen, unarmed, on all legs. T.R. a little over 2. Claws small, each with a very small barb.

Abdomen in dried specimens very dark brown. After maceration it can be seen that there is a triangular darker brown dorsal, sclerotised area at the base, and that the seventh segment and the tip of the abdomen are darker and more highly sclerotised than the rest, features which are obscured in the dried insect but may be more readily seen during life. It can be seen, too, that tergites 5–7 bear gland rods which, however, are relatively short and slender. Spermatheca single, highly sclerotised, oval, about 173 μ by 122 μ; the duct narrow and sclerotised at its commencement for about 18 μ.

BRAZIL: Nova Teutonia, 10.xi.1936, 1 ♀, Holotype, 6.xii.1936, 1 ♀, 24.xi.1937, 1 ♀, and 1.xii.1937, 2 ♀♀ (*Fritz Plaumann*).

Paryphoconus nigripes sp. n.

A dark brown species with the tips of the wings adorned with a dark cloud, and the legs entirely very dark brown.

♀. Length of wing 5·5 mm., greatest breadth 1·1 mm.

Head blackish. Eyes bare, widely separated above. Palpi short, darkish brown. Antennae almost uniformly very dark brown or blackish, torus as dark as other segments, the hairs on segments 3–10 stiff and lanceolate. Segments 4–10 subcylindrical, subequal; 11–15 more elongate, together slightly longer than 3–10, the last without stylet.

Thorax very dark brown, not shining, rather densely clothed with hairs which produce a shaggy appearance. Anterior border rather bluntly conical, with a small, knob-like, tubercle. Scutellum similarly very dark brown, with numerous hairs.

Wings long and narrow, with tip adorned with a dark brown cloud, and posterior border infuscated especially along Cu2 and at the margin of anal cell. There is, however, no distinct dark brown spot in the anal angle as there is in *P. angustipennis*. Anterior veins dark brown. Tip pointed, but not sharply. Anal lobe little developed, the angle very obtuse. Fringe normal. No macrotrichia; microtrichia dense, small. Costa not reaching tip of wing, but ending at about same distance before it as M1 does. R4 + 5 joining costa at its end. Radial cell single, very narrow throughout its length. Cross-vein situated about middle of wing, very short, not quite so long as distance separating bases of M1 and M2. Fork of Cu only slightly proximal to that of M. Halteres with dark brown knobs.

Legs all entirely very dark brown, rather densely clothed with shortish hairs, the hind pair not notably elongated. Femora of fore legs perhaps a little thickened at apex; all femora unarmed. Hind legs with first tarsal segment rather stout, not as long as tibia (17 : 30). On all legs fourth tarsal segment almost cordiform, fifth unarmed, and claws small, equal, each with a minute barb.

Abdomen very dark brown. Spermathecae and gland rods not examined.

N.E. ARGENTINA: Misiones, Puerto Aguirre, ii.–iii.1934, 1 ♀, Holotype (*K. G. Hayward*). The specimen (apart from the wing) was examined in the dried condition only.

Calyptopogon brevitarsis sp. n.

A dark brown or blackish species with the femora and tibiae very dark brown, and the hind legs not exceptionally long.

♀. Length of wing 4·7 mm., greatest breadth 1·1 mm.

Head blackish. Eyes bare, widely separated above. Palpi short, darkish brown. Antennae almost uniformly very dark brown, torus as dark as other segments, the hairs

on basal segments not especially stiff or lanceolate. Segments 4–10 subcylindrical, subequal; 11–15 more elongate, the last without stylet. The combined lengths of 11–15 not much more than those of 3–10.

Thorax almost black, with some greyish "bloom," prolonged anteriorly as a sharp peak which projects over the head; very sparsely clothed with short hairs. Tubercle very small, a mere knob. Scutellum blackish, bearing a few small hairs, but no large bristles.

Wings long and narrow, iridescent, infuscated at tip and base, and with anterior veins brown. Tip pointed, but not very sharply. Anal lobe little developed, the angle very obtuse. Fringe well developed, normal. No macrotrichia; microtrichia dense and rather large. Costa extending to tip of wing, R4 + 5 joining it tangentially some distance before its end. Radial cell single, very narrow, in the dried insect obliterated. Cross-vein situated about middle of wing, vertical, long, longer than distance separating bases of M1 and M2 (10 : 6). Fork of Cu only very slightly more proximal than that of M. Halteres with dark brown knobs.

Legs with all femora and tibiae entirely very dark brown. Tarsi of four anterior legs with proximal segments paler brown, and last 2–3 more or less infuscated, the last entirely dark; those of hind legs with first segment also very dark brown. Femora of fore legs somewhat thickened at apex, others slender; all unarmed. Hind legs not very long, first tarsal segment shorter than tibia (7 : 9). Fifth tarsal segment fusiform on fore legs; armed on all legs. Claws on all legs rather small, equal, barbed.

Abdomen dark brown, but not so dark as thorax; with sparse hairs. Tufts of long dark bristles present on ventral surface near tip. Spermathecae not examined.

Siam: Nakorn Nayoh, 4.vii.1929, 3 ♀♀, Holotype and 2 paratypes (*W. R. S. Ladell*). The specimens (apart from the wing) were examined in the dried condition only.

Macropeza edwardsi sp. n.

A darkish brown species with the thorax bluntly conical in front, the hind legs remarkably long, the fore femora only slightly thickened at the apex, and all the legs with the femora and tibiae mainly yellowish.

♀. Length of wing about 4·6 mm., greatest breadth 1·3 mm.

Head very dark brown. Eyes bare, widely separated above. Palpi darkish brown. Antennae dark brown, the hairs on segments 3–10 not especially stiff and lanceolate. Torus as dark as flagellum. Segments 4–10 short, subcylindrical, subequal; 11–15 more elongate, the last without stylet. The combined lengths of segments 11–15 not much more than those of 3–10.

Thorax dark brown, not shining, bluntly conical anteriorly, with a minute knob or tubercle. Mesonotum with greyish "bloom" through which, in some lights, can be seen four darker antero-posterior bands. Scutellum dark brown, with a similar pubescence, and bearing a number of small hairs, but no strong bristles.

Wings long and narrow, iridescent, unadorned, but with the anterior veins brownish. Tip rather sharply pointed. Anal angle obtuse. Fringe normal. No macrotrichia; but microtrichia present. Costa extending to tip of wing, R4 + 5 joining it tangentially a little before its end. Radial cell single, very narrow, indeed hardly visible in the dried insect, its base very short or almost inappreciable. Cross-vein proximal to middle of wing, almost vertical, long, about twice as long as the distance separating the bases of M1 and M2. Fork of Cu a little proximal to that of M. Halteres with dark brown knobs.

Legs mainly yellowish-brown, with only actual knees, extreme tips of tibiae, and terminal segments of tarsi all dark brown or black. Hind legs remarkably elongated, the tarsal segments very long, slender, and (excepting the last) almost colourless; first tarsal segment

about twice as long as tibia (55 : 30). Fourth tarsal segment cordiform on four anterior legs; fifth fusiform on fore legs, and armed on all legs. Claws all short, equal, barbed.

Abdomen dark brown. Spermathecae not examined.

Ceylon : Peradeniya, 1912, 1 ♀, Holotype (*J. C. F. Fryer*). The specimen was examined in the dried condition only. This is the insect briefly described by Edwards in 1913, and referred to by Johannsen (1927) as *Macropeza javanensis* Kieff.

Macropeza capensis sp. n.

A darkish brown species resembling *Macropeza edwardsi* sp. n. but with the hind legs shorter.

♀. Length of wing 4·1 mm., greatest breadth 1·0 mm.

Head very dark brown. Eyes bare, widely separated above. Palpi small, brown. Antennae uniformly very dark brown, torus as dark as other segments, the hairs on basal segments not especially stiff and lanceolate. Segment 3 about twice as long as 4; 4–10 subcylindrical, subequal; 11–15 more elongate, but not very long, together shorter (3 : 4) than 3–10, the last without stylet.

Thorax very dark brown with a greyish pruinescence, and rather scanty, inconspicuous, hairs; bluntly conical in front, with a small knob-like tubercle. Scutellum similar, but not so dark, more reddish.

Wings long and narrow, iridescent, unadorned, but with anterior veins yellowish-brown. Tip pointed, but not very sharply. Anal lobe moderately developed, the angle obtuse. Fringe normal. No macrotrichia; microtrichia dense, and not unusually small. Costa reaching not quite to tip of wing, but nearer to it than end of M1; R4 + 5 joining costa tangentially some distance before its end. Radial cell single, narrow throughout its length, but quite distinct. Cross-vein situated slightly proximal or about middle of wing, vertical, long, slightly longer than distance which separates bases of M1 and M2 (10 : 8). Fork of Cu a little proximal to that of M. Halteres with darkish brown knobs.

Legs yellowish-brown, with actual knees, extreme tips of tibiae, and terminal segments of tarsi darker brown. Hind legs notably elongated, with basal half of femora slightly paler than rest, and tarsal segments (excepting fifth which is dark brown) almost colourless; first tarsal segment slightly longer than tibia (37 : 27). Femora of fore legs not distinctly thickened at apex; all femora unarmed. Fourth tarsal segment very short, almost cordiform, on four anterior legs, longer, cylindrical, on hind legs; fifth apparently unarmed on all legs. Claws on all legs small, equal, barbed.

Abdomen dark brown, but not so dark as thorax. Spermathecae not examined.

South Africa : Cape Province, Ceres, iii.1925, 1 ♀, Holotype (*R. E. Turner*). The specimen (apart from the wing) was examined in the dried condition only.

Macropeza affinis sp. n.

This species resembles the preceding one in almost every respect, but is a little larger, the length of the wing about 4·8 mm. In it, too, the costa extends actually to the tip of the wing, the first tarsal segment of the hind legs is about the same length as the tibia, and the fifth tarsal segment on all the legs is armed. Additional points of difference may be found in the form of the spermathecae, etc., for the specimen was examined in the dried condition only.

South Africa : Orange Free State, Harrismith, 1–20.iii.1927, 1 ♀ (*R. E. Turner*).

Macroptilum insignipennis sp. n.

A blackish species with the femora and tibiae not very dark brown, the wings with the fringe greatly reduced, and the anal angle nearly rectangular, and the alar squama much enlarged.

♀. Length of wing 5·3 mm., greatest breadth 1·8 mm.

Head blackish. Eyes bare, widely separated above. Palpi short, dark brown. Antennae almost uniformly blackish, the hairs on basal segments (3–7) stiff and lanceolate. Torus blackish. Segment 3 unusually large, about twice as long as 4; 4–10 subcylindrical, not varying much in length, but narrowing rather rapidly; 11–15 much elongated, subequal, about three times as long as 10, the last without stylet. The combined lengths of 11–15 about one-half greater than that of 3–10.

Thorax blackish, not shining, with a greyish pruinescence; bluntly conical in front. Tubercle quite small. Scutellum blackish, without strong bristles.

Wings long and narrow, but not so narrow as usual, iridescent, unadorned, but with slight infuscation at tip and along posterior border, and with costa brown, and anterior veins yellowish. Tip pointed. Anal angle well developed, nearly rectangular. Fringe much reduced, practically limited to border of wing proximal to end of Cu2. No macrotrichia; microtrichia dense, but minute and not easily seen in middle of wing. Costa extending to tip of wing, R4 + 5 joining it a short distance before its end. R1 feebly developed, almost colourless, about half length of R4 + 5, with which it is almost in contact for the greater part of its length. The single radial cell therefore practically obliterated at base, but distal half quite wide. Cross-vein situated well beyond middle of wing, almost vertical, very long, about same length as distance between bases of M1 and M2. Fork of Cu far proximal to that of M. Anal vein forked. Alar squama greatly enlarged, and conspicuous. Halteres with blackish knobs.

Legs not very dark. Femora mainly darkish brown, those of the fore legs, however paler brown at base. Tibiae of four anterior legs also darkish brown, but those of hind legs pale brown excepting narrowly at base and apex where they are darker. First tarsal segment on all legs pale brown, others more or less infuscated. Femora of fore legs slightly thickened at apex, others slender; all unarmed. On four anterior legs tarsus with third segment very short, fourth cordiform; fifth fusiform and armed on fore legs, missing from middle legs. On hind legs tarsus extremely long, all segments slender and cylindrical; first twice as long as tibia, fifth very short, armed. All claws relatively minute, equal, barbed.

Abdomen missing.

West Africa: Sierra Leone, Njala, x.1931, 1 ♀, Holotype (*E. Hargreaves*). The specimen (apart from the wing) was examined in the dried condition only.

Macroptilum calcipennis sp. n.

A large and very dark or blackish species, with the femora and tibiae rather dark yellowish-brown, the wings long and narrow, with two radial cells, and the anal angle well developed, rectangular.

♀. Length of wing 6·0 mm., greatest breadth 1·5 mm.

Head very dark brown or blackish. Eyes bare, widely separated above. Palpi darkish brown, especially at tip, short. Antennae uniformly very dark brown, the hairs on segments 3–10 not especially stiff or lanceolate. Torus as dark as flagellum segments. Segments 4–10 short, subcylindrical, subequal; 11–15 more elongate, the last without stylet. The combined lengths of segments 11–15 not much greater than those of 3–10.

Thorax blackish, not shining but covered by a greyish "bloom," bluntly conical in

front. Tubercle minute. Scutellum similarly coloured, bearing a few small hairs, but no large bristles.

Wings long and narrow, iridescent, unadorned but infuscated at extreme tip and along anterior border, and with anterior veins dark brown. Tip pointed, but not sharply. Anal angle well formed, rectangular. Fringe normal. No macrotrichia; but microtrichia present, small. Costa extending to tip of wing, R4 + 5 joining it just before its end. Two radial cells, separated by a feebly developed R2. Radial cells not very narrow, clearly separated from costa even in dried insect; the base longer than cross-vein (9 : 5). Cross-vein situated about middle of wing, almost vertical, long, but not quite so long as distance between bases of M1 and M2 (5 : 8). Fork of Cu a little proximal to that of M. Halteres with dark brown knobs.

Legs unfortunately damaged. Femora and tibiae of all legs rather dark yellowish-brown, the femora slightly darker than tibiae, and knees and tips of tibiae slightly darker than rest. Tarsi of hind legs missing: those of four anterior legs rather pale brown, but with terminal segments infuscated, fourth cordiform, fifth armed. Fore femora slightly thickened at apex, others slender; all unarmed. Claws of four anterior legs small, equal, barbed.

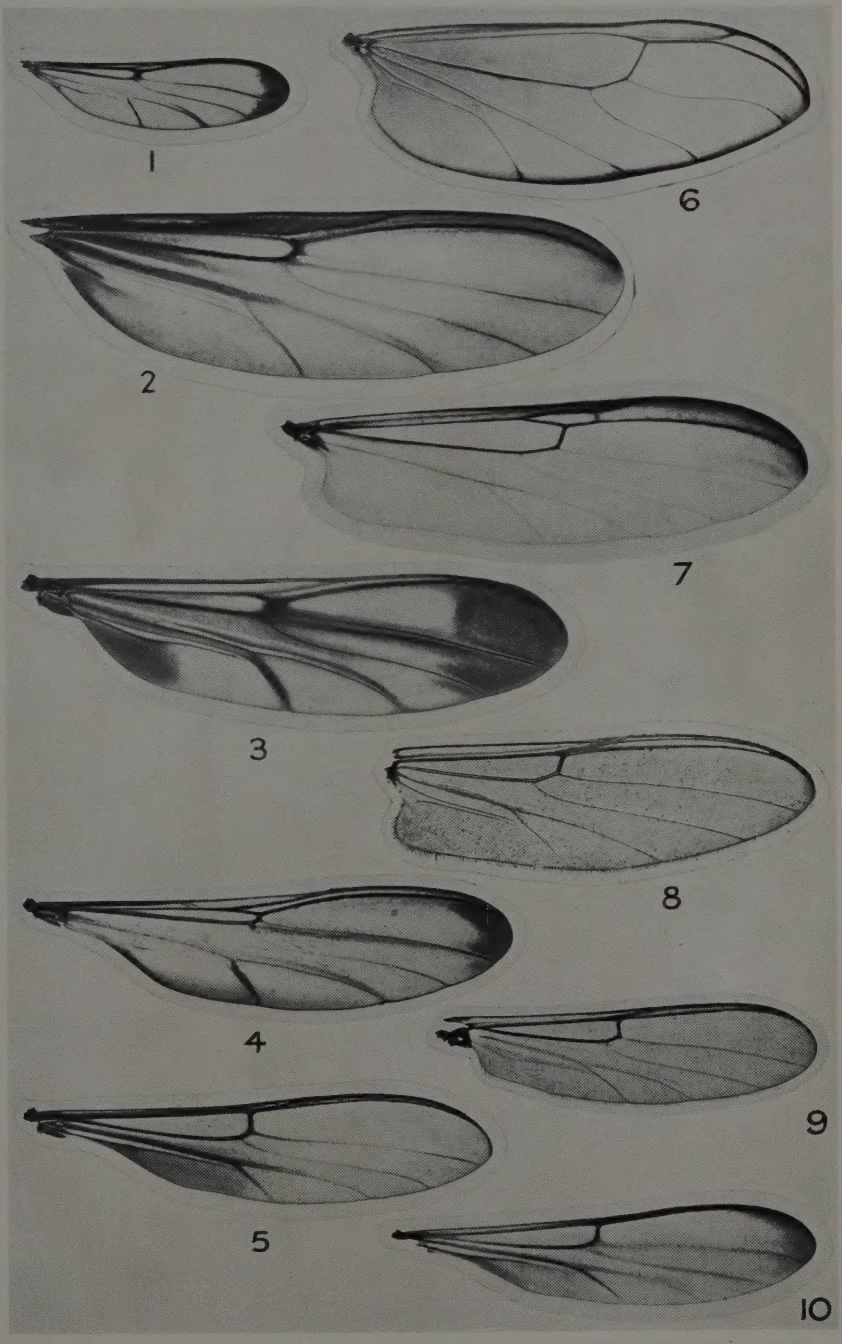
Abdomen blackish, with grey pubescence. Ventral surface armed distally with tufts of very long black bristles apparently somewhat similar to those shown in the figure given (1923) of *Macroptilum nigeriae*. Spermathecae not examined.

West Africa: Sierra Leone, Njala, 7.xii.1917, 1 ♀, Holotype (*E. Hargreaves*). The specimen (apart from the wing) was examined in the dried condition only.

This insect, which is provisionally assigned to the genus *Macroptilum*, differs notably from all the other species of that genus, and a new genus should probably be erected for it.

Plate 1.

Fig. 1. *Paryphaconus nubifer* sp. n.
2. *P. grandis* sp. n.
3. *P. angustipennis* End.
4. *P. nigripes* sp. n.
5. *Calyptopogon albitarsis* Kieff.
6. *Macroptilum insignipennis* sp. n.
7. *M. calcipennis* sp. n.
8. *Macropeza albitarsis* Meig.
9. *M. capensis* sp. n.
10. *Calyptopogon brevitarsis* sp. n.



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Wings of *Ceratopogonidae.*